the really important pioneering papers from the vast periodical literature that has arisen in Germany during the past ten years.

In concluding this notice, one is naturally led to reflect upon the attitude which appears to be still maintained by a number of English chemists in regard to the modern theories of solution. There can be no doubt that a student reading Dr. Walker's book will become imbued with these theories, and will acquire convictions that will be difficult to eradicate. If these theories are wrong, if they are even strongly suspect, the responsibility of the teacher becomes serious It is true Dr. Walker gives here and there some indications of the objections which have been urged against them, but there is no explicit statement of the opposition case. The question arises whether an opposition case can be explicitly stated. The theory of ionic dissociation has been applied to explain and co-ordinate a very large number of chemical facts, and has thrown light on matters that were previously dark. The contention of the objectors appears to be mainly that this light is illusory. The present writer is far from claiming judicial functions in the matter; but he ventures to think that the opposition to the dissociation theory would be more respected, both here and on the Continent, if it were of a more positive character, and if a more tangible alternative theory could be presented which should prove itself not less comprehensive and practically productive than the one which is assailed. The history of science shows plainly enough that a comprehensive theory with some weak points will hold its ground until a not less comprehensive theory with fewer weak points makes its appearance. It is probably on this ground that Prof. Walker takes his stand in freely imparting the doctrine of electrolytic dissociation to elementary students of physical chemistry. ARTHUR SMITHELLS.

OUR BOOK SHELF.

Catalogue of the Lepidoptera Phalaenae in the British Museum. Vol. ii. Catalogue of the Arctiadæ (Nolinæ, Lithosianæ) in the collection of the British Museum. By Sir George F. Hampson, Bart. Pp. xx + 589, and plates xviii–xxxv. (London: Printed by order of the Trustees, 1900.)

THE first volume of this series, containing the Syntomidæ, was published in 1898, and we have now to welcome the appearance of the second, comprising two groups, which the author treats as sub-families of the Arctiadæ; the typical Arctianæ being reserved for the third volume. 1193 species are described in the second volume, all of which, except 162, belong to the Lithosianæ, the Nolinæ being a comparatively small sub-family.

The enormous extent of the insect-world is but little realised, even by naturalists, unless they are entomologists; but, considering the progress already made, we are probably well within the mark in saying that it may well take fifty volumes, and the whole of the new century, to complete the Catalogue before us; and yet the moths are only a portion of one of the seven principal orders of insects, and one which is probably far surpassed in number of species by at least three other orders.

The descriptions of the species are necessarily brief, but are arranged on a uniform plan which admits of easy comparison; and their determination is further facilitated by comprehensive tables of genera and species, and by the large proportion which have been figured, either in the crowded coloured plates, or in text-illustrations. We are glad to see that space has been found for notices of larvæ, when known. Space has also been devoted to phylogeny; but it is, perhaps, an open question whether it is worth while to deal with this subject in a descriptive work at all. At best, it can only express the momentary and necessarily fluctuating opinions of an individual author on the affinities of genera and species from the very imperfect materials at present available; for until the earlier stages of a considerable number of forms have been carefully studied and tabulated for comparison, it is impossible for us to judge of them completely or accurately. We would therefore prefer to treat this branch of the subject tentatively, in ephemeral publications, rather than to introduce a necessarily fluctuating factor, of merely temporary value at best, into a standard work of reference, of such great and permanent value to all lepidopterists as the present. We must also object to the author's tendency to dogmatise on the subject, especially as our knowledge of fossil insects is at present practically nil, and of the early stages of the great majority no better. Such a phrase as [the Arctiadæ form] "a family of moths derived from the Noctuidæ," seems to us quite out of place in a scientific book at the present state of our knowledge; though a formula which we find a little further on is less objectionable; "the *Nolinae* probably arose from a very early Arctian form which had affinities in the *Noctuidae* to *Hypenae* and *Sarrothripae*."

But these are details of individual taste or judgment; while there cannot be two opinions respecting the value and importance of the work. W. F. K.

Giordano Bruno, zur erinnerung an den 17 Februar, 1600. Von Alois Riehl. Zweite neu bearbeitete Auflage. Pp. iv + 56. (Leipzig: Engelmann, 1900.)

EARLY in 1600 Giordano Bruno went to the stake in the cause of free speech and thought. The ashes of martyrdom have ere now kept evergreen even reputations and names that were otherwise of little worth. But Bruno's life and work are alike memorable. Few, however, of those to whom the romantic wander-years and heroic death appeal, have leisure and training to grapple with the technical Latin and hard Italian of the versatile and stormy Nolan. The tercentenary, therefore, of Bruno's tragedy can have no memorial more fitting than Prof. Alois Riehl's "Giordano Bruno." Would that it were in English! Dating originally 1889, Prof. Riehl's brochure has undergone revision thorough and throughout. It puts Bruno in his right setting of time and place. It resumes, with brevity and lucidity quite noteworthy, the principles for which Bruno gave his life. Bruno originated neither Copernican physics nor pantheist metaphysics. His debt to one close forerunner at least is not small. Yet in taking the new astronomy as a scientific basis, and only therefrom passing to such metaphysical conceptions as infinity and unity, while reaching out ultimately to a monistic principle, it is Bruno and not his precursors, physicist and revived neoplatonist, that may claim to father modern naturalism. Prof. Riehl characterises the system as "theocentric," since nature is, for Bruno, *deus in rebus*. Bruno is said to have met the process which resulted in his condemnation by equivocating between what he accepted *secundum fidem* and what he affirmed *secundum rationem*. At any rate, whatever human weakness he may have shown, he lost no opportunity of reaffirming his principles. He recanted nothing. He could have saved himself would he but have prostituted his pen to apologetics on behalf of the reigning orthodoxy. He chose not *propter vitam vivendi perdere causas*. And he died a knight-errant of the free spirit. H. W. B.